

Atty Docket No. JCLA8999

Serial No. 10/064,649

AMENDMENT**In The Claim:**

Claim 1. (Currently amended) A photolithographic process that involves building a sandwich photoresist structure, comprising the steps of:

providing a substrate;

forming a first photoresist layer over the substrate;

forming a non-photosensitive material layer over the first photoresist layer, wherein the non-photosensitive material layer includes an anti-reflection layer and a material of the anti-reflection layer is selected from the group consisting of addition polymerization polymer, condensation polymerization polymer and ring-opening polymerization polymer;

forming a second photoresist layer over the non-photosensitive material layer;

conducting a first photo-exposure of the second photoresist layer;

conducting a first photoresist development to pattern the second photoresist layer and the non-photosensitive material layer; and

conducting a second photo-exposure and a second photoresist development to pattern the first photoresist layer using the second photoresist layer and the non-photosensitive material layer as a mask.

Claim 2. (Original) The photolithographic process of claim 1, wherein the non-photosensitive material layer is formed from a material that can be dissolved by the chemical developer used in the first photoresist development.

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Claims 3-4 (canceled)

Claim 5. (Original) The photolithographic process of claim 1, wherein the non-photosensitive material layer has a thickness between about 300Å to 1000Å.

Claim 6. (Original) The photolithographic process of claim 1, wherein the first photoresist layer is a positive photoresist layer.

Claim 7. (Original) The photolithographic process of claim 1, wherein the first photoresist layer has a thickness between about 2000Å to 7000Å.

Claim 8. (Currently amended) The photolithographic process of claim 1, wherein the second photoresist layer is ~~a positive photoresist layer or a negative photoresist layer.~~

Claim 9. (Original) The photolithographic process of claim 1, wherein the second photoresist layer has a thickness between about 1000Å to 3000Å.

Claim 10. (Currently amended) A method of forming the self-aligned dual damascene opening of a dual damascene structure, comprising the steps of:

providing a substrate having a dielectric layer thereon;

forming a first photoresist layer over the dielectric layer;

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forming a non-photosensitive material layer over the first photoresist layer, wherein the non-photosensitive material layer includes an anti-reflection layer and a material of the anti-reflection layer is selected from the group consisting of addition polymerization polymer, condensation polymerization polymer and ring-opening polymerization polymer;

forming a second photoresist layer over the non-photosensitive material layer;

conducting a first photo-exposure of the second photoresist layer;

conducting a first photoresist development to pattern the second photoresist layer and the non-photosensitive material layer and form a trench;

conducting a second photo-exposure of the first photoresist layer;

conducting a second photoresist development to pattern the first photoresist layer and form a via opening underneath the trench, wherein the trench and the via opening together constitute a dual damascene opening pattern; and

conducting an etching operation to transfer the dual damascene opening pattern to the dielectric layer, thereby forming a dual damascene opening in the dielectric layer.

Claim 11. (Original) The method of claim 10, wherein the non-photosensitive material layer is formed from a material that can be dissolved by the chemical developer used in the first photoresist development.

Claims 12-13 (canceled)

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Claim 14. (Original) The method of claim 10, wherein the non-photosensitive material layer has a thickness between about 300Å to 1000Å.

Claim 15. (Original) The method of claim 10, wherein the first photoresist layer is a positive photoresist layer.

Claim 16. (Original) The method of claim 10, wherein the first photoresist layer has a thickness between about 2000Å to 4000Å.

Claim 17. (Original) The method of claim 10, wherein the second photoresist layer is a negative photoresist layer.

Claim 18. (Original) The method of claim 10, wherein the second photoresist layer has a thickness between about 2000Å to 4000Å.

Claim 19. (Currently amended) A photolithographic process, comprising the steps of:
providing a substrate;
forming a positive photoresist layer over the substrate;
forming a non-photosensitive material layer over the positive photoresist layer, wherein the non-photosensitive material layer includes an anti-reflection layer and a material of the anti-reflection layer is selected from the group consisting of addition polymerization polymer,

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condensation polymerization polymer and ring-opening polymerization polymer;

forming a negative photoresist layer over the non-photosensitive material layer;
conducting a first photo-exposure of the negative photoresist layer;
conducting a first photoresist development to pattern the negative photoresist layer and the non-photosensitive material layer and form a first pattern;
conducting a second photo-exposure of the positive photoresist layer; and
conducting a second photoresist development to pattern the positive photoresist layer and form a second pattern.

Claim 20. (Original) The photolithographic process of claim 19, wherein the non-photosensitive material layer is formed from a material that can be dissolved by the chemical developer used in the first photoresist development.

Claims 21-22 (canceled)

Claim 23. (Original) The photolithographic process of claim 19, wherein the non-photosensitive material layer has a thickness between about 300Å to 1000Å.

Claim 24. (New) The photolithographic process of claim 1, wherein the second photoresist layer is a positive photoresist layer.